

Patent claims

1. A wheel bearing module (1) in a wheel carrier (7), having a wheel bearing (8) and having a wheel flange (5d), the wheel flange (5d) being mounted by means of the wheel bearing (8) with respect to the wheel carrier (7) such that it can rotate about a rotational axis (11), the wheel bearing module (1) having the features:

- the wheel bearing (8) has at least one outer ring (2),
- the wheel bearing (8) is supported in the wheel carrier (7) at least in sections via the outer ring (2) at least radially with respect to the rotational axis (11),
- the outer ring (2) has a flange (2c) which points radially away from the rotational axis (11) axially on the end side of the outer ring (2),
- the flange (2c) is fixed with respect to the wheel carrier (7) axially with fastening elements (14), the fastening element (14) reaching at least partially behind the flange (2c) on a side of the flange (2c) which faces axially away from the wheel carrier (7), and the fastening element (14) bearing axially fixedly on the flange (2c) in the process,
- the wheel flange (5d) lies axially opposite the outer ring (2), the wheel flange (5d) protruding radially away from the rotational axis (11) at least in sections to a greater extent than the flange (2c),
- the wheel flange (5d) has first recesses (5f) which pass axially through the

wheel flange (5d),

- at least one of the first recesses (5f) lies axially opposite the flange (2c) at least once per revolution of the wheel flange (5d) about the rotational axis (11) in such a way, that the wheel flange (5d) does not cover the flange (2c) axially at least at that location where the fastening element (14) bears axially against the flange (2c).
2. The wheel bearing module as claimed in claim 1, in which each of the first recesses (5f) lies simultaneously axially opposite the flange (2c) at least once per revolution of the wheel flange (5d) about the rotational axis (11) in such a way, that the wheel flange (5d) does not cover the flange (2c) in the axial direction at that location where the fastening elements (14) are in contact.
 3. The wheel bearing module as claimed in claim 1, in which the first recesses (5f) are spaced apart from one another around the rotational axis (11) with the same pitch.
 4. The wheel bearing module as claimed in claim 1, in which the first recesses (5f) are open radially to the outside.
 5. The wheel bearing module as claimed in claim 1, in which the first recesses (5f) are holes which pass axially through the wheel flange (5d).
 6. The wheel bearing module as claimed in claim 1, having axial second recesses (2f) on the flange (2c), the fastening element (14) reaching axially through the second

recesses (2f).

7. The wheel bearing module as claimed in claim 6, in which the second recesses (2f) are open radially to the outside.

8. The radial bearing as claimed in claim 6, in which the second recesses (2) are axial through holes (16).

9. The wheel bearing module as claimed in claim 6, which has more first recesses (5f) than second recesses (2f).

10. The wheel bearing module as claimed in claim 6, in which bolts are fixed to the wheel carrier (7), and that at least one of the fastening elements (14) is fixed to each of the bolts.

11. The wheel bearing module as claimed in claim 1, in which the fastening means are heads (14a) of bolts.

12. The wheel bearing module as claimed in claim 1, in which the flange (2c) bears axially against the wheel carrier (7) at least in sections.

13. The wheel bearing as claimed in claim 1, in the wheel carrier (7) reaches around at least two raceways (2a) of the outer ring (2), a hub (5) being supported in the outer ring (2) such that it can rotate about the rotational axis (11) via at least two rows of rolling bodies (3) on the raceways (2a), and the wheel flange (5d) leading radially from the hub (5).

14. The wheel bearing module as claimed in claim 1, in which the hub (5) is mounted axially nonreleasably with respect to the outer ring (2) in the wheel bearing (8).

15. The wheel bearing module as claimed in claim 1, in which the outer ring (2) is cold formed in one piece.

16. A method for mounting the wheel bearing module (1) as claimed in claim 1, in which the wheel bearing (8) is mounted in the wheel carrier (7) with a hub (5) and the wheel flange (5d) as a unit, and is fastened to the wheel carrier (7), the method having the following method steps:

- aligning of the first recesses (5f) and the second recesses (2f) by rotation of the flanges (2c, 5d) against each other, with the result that each of the first recesses (5f) lie simultaneously axially opposite at least one of the second recesses (2f) in such a way, that the wheel flange (5d) does not cover second recesses (2f) in the axial direction,
- insertion of centering bolts (25) into the second recesses (2f), the centering bolts (25) reaching axially through at least two of the first recesses (5f),
- axial supporting of the flange (2) on the centering bolts (25) counter to axial assembly forces, the centering bolts (25) reaching axially through the first recesses (2f) until the flange (2c) is supported on the centering bolts (25),

- insertion of the centering bolts into fastening holes (7b) of the wheel carrier (7),
- axial pressing in of the wheel bearing (8) by means of the assembly forces,
- removal of the centering bolts (25) from the fastening holes (7b), from the second recesses (2f) and from the first recesses (5f),
- fastening of bolts in the fastening holes (7b), in each case one fastening element (14) being inserted as a bolt axially through one of the first recesses (5f) into a second recess (2f) and subsequently being fastened in the fastening holes (7b) in such a way that a head (14a) of the bolt bears axially against one of the edges of one of the second recesses (2f) axially.

17. The method as claimed in claim 16, in which the flange (2c) is supported axially counter to the axial assembly forces additionally on axial supports (24) axially, each of the axial supports (24) reaching through the wheel flange (5d) axially at a further one of the first recesses (5f) and bearing axially against the flange (2c) in a manner which is spaced apart from the second recesses (2f).